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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,968	01/28/2004	Moussa Abdi	218728-000211	4318

7590  
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06/28/2007

EXAMINER
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WONG, LINDA

ART UNIT	PAPER NUMBER
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2611

MAIL DATE	DELIVERY MODE
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06/28/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/766,968

Applicant(s)

ABDI ET AL.

Examiner

Linda Wong

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-18 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1/28/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Drawings*

2. The drawings were received on 7/6/2004. These drawings are accepted.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 1,8,12** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.
  - a. Claims 1,8,12 recite the limitation "calculating new soft estimates of the symbols of the second set only ...". Based on Fig. 1 and the claimed limitations, label 10 produces the first and second set, wherein the first set is labeled F, and the second set is the output from label sgn. Label 14 is shown to calculate the new soft estimates. Label 14 is shown to receive the modified signal, Y', the

symbols in the channel estimate also found in the first set, F, and the estimated response parameters as outputted from label 15. The modified signal is produced by using the first set of soft estimates, F, as well as the second set of soft estimates outputted from label sgn. Based on the drawing and disclosure, the new soft estimates are calculated based on both the first and second set of soft estimates produced by label 10 as well as the modified signal and the estimate responses. The examiner cannot find in the specification or drawings the use of "the second set of soft estimates only" by the component label 14.

**Note:** Due to the 112 rejection as stated above, to further prosecution, the prior art rejection stated below will refer to the limitation as "calculating new soft estimates of the symbols of the second set as a function of the modified signal and of the estimated response parameters.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-10,12-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Papasakellariou (US Patent No.: 6700919) in view of Reed (EP Patent No.: 1315307).

a. **Claim 1,8,12,**

i. Papasakellariou discloses

- “/a/ estimating response parameters of the multiplexed channels” (Fig. 3, label 34)
- “/b/ calculating soft estimates of symbols transmitted over the multiplexed channels, as a function of the received signal and of the estimated response parameters” (Fig. 3, labels 34, 36)
- “/c/ dividing the symbols whose soft estimates have just been calculated between a first set of symbols satisfying a confidence criterion applied to said soft estimates and a second set of symbols not satisfying the confidence criterion” (Fig. 3, labels 38,39, wherein the demultiplexor outputs information as per the threshold  $E\_Complete$ . The first set would be the output from label 39 and the second set would be the output to label To Decoder.)
- “/d/ determining a modified signal” (Fig. 3, output from label 40)
- “/e/ calculating new soft estimates of the symbols of the second set only, as a function of the modified signal and of the estimated response parameters” (Fig. 2, label 30, wherein the input is produced as a

function of the modified signal (Fig. 3, output from label 40, and the estimated response parameters (Fig. 3, label 34).)

- ii. Papasakellariou fails to disclose "d/ determining a modified signal by subtracting estimated contributions corresponding to the symbols of the first set, respectively, from the signal subjected to the previous calculation of soft estimates".
  - iii. Reed discloses such a limitation. (Fig. 1, labels 30,60,7,31) It would have been obvious to one skilled in the art at the time of the invention to replace the information data removal component as disclosed by Papasakellariou with the information removal as disclosed by Reed so to generate a signal with reduced interference. (Abstract)
- b. **Claim 2,9,13**, Papasakellariou "step /e/ is executed according to a detection algorithm of more complex nature than step /b/". (Col. 6, lines 40-45 discloses the decoder as shown in Fig. 2, label 30 is a Viterbi decoder.)
- c. **Claims 4,15**, Papasakellariou discloses "the step of repeating at least once the sequence of steps /c/ to /e/". (Fig. 7 shows the iteration of the system, wherein label 64 would be repeated for those estimates that have been determined as complete.
- d. **Claims 5,16**, Papasakellariou "the confidence criterion varies from one iteration of the sequence of steps /c/ to ~e/ to the next". (Fig. 3, label E\_Complete determines whether the estimates are complete and would change for each iteration.)

- e. **Claims 7,18**, Papasakellariou “the confidence criterion is expressed as a confidence threshold to be reached by the soft estimates of the symbols.” (Col. 8, lines 10-24 discloses E\_Complete is a state in which the soft estimates reach when complete.)
5. **Claims 3,10,14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Papasakellariou in view of Reed, further in view of Applicant’s Background (pages 1-5).
- a. **Claims 3,10,14**,
    - i. Papasakellariou in view of Reed fails to disclose “step /e/ is executed according to a multi-user detection algorithm”.
    - ii. Applicant’s background discloses such a limitation. It would have been obvious to one skilled in the art at the time of the invention to perform multi-user detection algorithm as disclosed by the Applicant’s background as opposed to Viterbi decoding as disclosed by Papasakellariou so to not overly increase the global complexity of the calculations with respect to the traditional “rake” receiver. (page 4, lines 15-23)

***Allowable Subject Matter***

6. **Claim 11** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2611

**Conclusion**

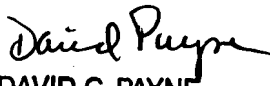
7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
- a. Kleinerman et al (US Patent No.: 6980602).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linda Wong whose telephone number is 571-272-6044. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Linda Wong  
6/20/2007

  
DAVID C. PAYNE  
SUPERVISORY PATENT EXAMINER